In the application of: Mehrotra et al.
Serial No. 10/606,482
Filed: June 26, 2003

RESPONSE TO NON-FINAL OFFICE ACTION OF MAY 2, 2007

REMARKS

Introduction

This paper is responsive to the pending non-final Office Action mailed May 2, 2007 in the above-captioned patent application. By this paper, applicants have done the following:

- added new claim 56 directed to the heat treating step for the silicon nitride-based ceramic
- added new claim 57 directed to a titanium carbonitride-based ceramic powder mixture
- presented persuasive arguments supportive of the allowance of the claims still under objection and/or rejection.

This paper fully responds to the pending non-final Office Action. Applicants solicit the allowance of the pending claims in this patent application. Applicants point out with appreciation that claim 55 stands allowed.

Rejection of Claims 25-34 under 35 USC §112 ¶1st

The Examiner has rejected claims 25-34 under 35 USC §112 ¶1st for failing to comply with the written description requirement based upon the claim recitation, "... greater than 1400 degrees Centigrade ...". This recitation is in claim 25 and claims 26-34 depend from claim 25. Applicants respectfully disagree with the rejection for the following reasons.

Applicants can show possession of the claimed invention using descriptive means as "**words**, structures, figures, diagrams, and formulas that fully set forth the claimed invention." Emphasis added. See MPEP 2163.02 Rev. 5 (August 2006) page 2100-179. In this case, the description of temperature for the heat treating step encompasses the claim recitation, "... greater than 1400 degrees Centigrade ...".

In the application of: Mehrotra et al.
Serial No. 10/606,482
Filed: June 26, 2003

RESPONSE TO NON-FINAL OFFICE ACTION OF MAY 2, 2007

More specifically, in many places the specification shows that applicants possessed a heat treatment that took place at a temperature greater than 1400 degrees Centigrade. For the following mixtures, the temperature of the heat treatment was greater than 1400 degrees Centigrade: Mixture I (1815 °C at page 9, line 6), Mixture II (1770 °C at page 11, line 16), Mixture III (1725 °C at page 16, line 28), Mixture IV (1860 °C at page 12, line 22), Mixture V (1650 °C at page 12, line 32), Mixture VI (1650 °C at page 13, line 11), and Mixture VII (1650 °C at page 13, line 23).

In light of the above evidence, applicants submit that one skilled in the art would have appreciated as of the filing date that applicants had in their possession the invention per claim 25 wherein the process included a heat treating step carried out at a temperature, "... greater than 1400 degrees Centigrade ...". The standard as defined by MPEP 2163.02 (i.e., does the description clearly allow persons of ordinary skill in the art to recognize that applicants invented what is claimed?) is satisfied, and applicants solicit the removal of this rejection.

Rejection of Claims 25-28 and 31-34 under 35 USC §103(a) over Jindal et al.

The Examiner rejects claims 25-28 and 31-34 under 35 USC §103(a) over Jindal et al. Applicants disagree with the rejection for the reasons set forth below.

As set forth above, claim 25 requires a heat treatment after grinding and Jindal does not teach or suggest this recitation. It is with hindsight in mind for the Examiner to argue (page 3, lines 9-11 of the final Office Action) that:

> Regarding the limitation that the heat treatment is performed at the claimed temperature, the temperature range that is claimed is similar to that which would be used to sinter the cutting insert.

Essentially, the Examiner argues that one can take a teaching of a 400°C step used to evaporate cleaning mixture prior to commencing a coating operation and transform it into a heat treating step that takes place at about 1400-2200°C. Applicants submit

that it takes impermissible hindsight to take a heating step and more than triple the temperature, as well as apply the heat treatment for a different purpose, to arrive at the claimed cutting insert. MPEP 2142 (Rev 5 August 2006, page 2100-125 reads [in part], "The tendency to resort to 'hindsight' based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art."

In regard to claims 26-29 and 31-34, each one of these claims depends in one fashion or another from claim 25, and hence, is allowable for the reasons advanced in support of the allowance of claim 25.

For the above reasons, applicants submit that the rejections lack merit and solicit the removal thereof along with the allowance of the claims.

Rejection of Claim 30 under 35 USC §103(a) over Jindal et al. in view of Moriguchi et al.

The Examiner rejects claim 30 under 35 USC §103(a) over Jindal et al. in view of Moriguchi et al. Applicants submit that claim 30 is allowable for the reasons set forth below.

The Examiner uses the portion of Jindal et al. that deals with the heat treatment of a ground cutting insert. The Examiner then attempts of combine Jindal et al. with a document (i.e., Moriguchi et al.) that specifically avoids grinding of the cutting insert. In fact, Moriguchi et al. reads (Col. 3, lines 47-52):

> It is an object of the present invention to provide a tool or insert of a silicon nitride sintered body and a tool or insert of a surface-coated silicon nitride sintered body, each of which has excellent wear resistance as well as toughness by improving the surface state of the silicon nitride sintered body without grinding.

Applicants submit that the combination is improper in light of this difference that is more in kind than even degree. It is improper to combine a ground-heat treated document (i.e., Jindal et al.) with a non-ground document (Moriguchi et al.) to arrive at the claimed invention of claim 30. Further, appellant submits that the very recent United States Supreme Court decision in KSR International Co. v. Teleflex, Inc., 82 USPQ2d 1385 (US 2007) cannot be cited to justify the impermissible use of hindsight in the formulation of an obviousness rejection. In KSR, the United States Supreme Court wrote that, "[A] factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning." See 82 USPQ2d at page 1397.

Finally, claim 30 depends from claim 25, and is allowable for the reasons advance din support of claim 25. Applicants solicit the removal of the rejection and the allowance of claim 30.

Rejection of Claims 25-28 and 30 under 35 USC §103(a) over JP'174

The Examiner rejects claims 25-28 and 30 under 35 USC §103(a) over JP'174. Applicants submit that these claims are allowable for the reasons set forth below.

Claim 25 reads [in part] that, "...heat treating the ground ceramic cutting insert at a temperature between greater than 1400 degrees Centigrade and about 2200 degrees Centigrade so as to form the heat treated ground ceramic cutting insert." Applicants believe that the lower limitation has significance vis-à-vis JP'174 since JP'174 expressly discourages a heat treatment above 1400 °C. In this regard, the English translation of JP'174 reads [in part]:

> Furthermore, in this inventive method the heating temperature of the heat treatment is set at 1050~1400 °C because at temperatures below 1050 °C crystallization of the glass phase is inadequate, and as a result the desired effect of improving adhesion with the hard coating is not

> obtained. On the other hand, if the temperature exceeds 1400 °C it causes a breakdown reaction in the sialon or Si_3N_4 that is the main component of the matrix, and tool strength decreases.

This text establishes that JP'174 cannot extend its reach for prior art purposes past 1400 °C. For this reason, claim 25 is allowable over JP'174.

Claims 26-28 and 30 depend from claim 25, and hence, are allowable for the reasons advanced in support of claim 25.

New Claims 56 and 57

Claim 56 calls for, "...the heat treating step occurs at a temperature between about 1600 degrees Centigrade and about 2200 degrees Centigrade." This claim finds support at page 9, lines 10-13 of the specification. This range for the silicon nitride-based ceramic is greater than what the prior art teaches. In this regard, JP174 actually teaches against a temperature greater than 1400 °C. Claim 56 is allowable.

Claim 57 calls for a composition comprising alumina, silicon carbide whiskers and titanium carbonitride. This claim finds support in Table II (Mixture VI) in the specification. None of the applied references addresses the titanium carbonitride-based ceramic cutting insert. Claim 57 is allowable.

Conclusion

For the above reasons, applicants solicit the removal of the rejections and request allowance of the claims. In this regard, applicants submit:

> (1) that it is an impressible expansion of the Jindal et al. disclosure to more than triple the 400 °C heat treatment step to encompass the claimed temperature range for the heat treatment (i.e., "... heat treating the ground ceramic cutting insert at a temperature between greater than

In the application of: Mehrotra et al.
Serial No. 10/606,482
Filed: June 26, 2003

RESPONSE TO NON-FINAL OFFICE ACTION OF MAY 2, 2007

1400 degrees Centigrade and about 2200 degrees Centigrade so as to form the heat treated ground ceramic cutting insert.";

(2) that it is improper to combine Jindal et al. with Moriguchi et al. since one pertains to a ground cutting insert and the other expressly avoids grinding the cutting insert; and

(3) that the Examiner must appreciate that JP'174 excludes heat treating at a temperature greater than 1400 degrees Centigrade.

If the Examiner disagrees with the above arguments, but has suggestions to place the claims in form for allowance, applicants urge the Examiner to contact the undersigned attorney (615-662-0100) or Mr. John J. Prizzi, Esq. (724-539-5331) to discuss the claims.

Respectfully submitted,

Stephen T. Belsheim
Registration No. 28,688

179 Belle Forrest Circle
Suite 102
Nashville, Tennessee 37221
Telephone: 615 662 0100
Facsimile 615 662 0352
Customer No. 1400

Date: September 4, 2007